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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,769

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Niels Hald Pedersen

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EXAMINER

HAGEMAN, MARK

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/530,769	Applicant(s) PEDERSEN ET AL.	
	Examiner Mark Hageman	Art Unit 3653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4-7-2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: para 27 lines 3+ read "due ia to the" it is unclear what this means or if "ia" should be deleted. Para 22 line 2 "timer" should be timber.

Appropriate correction is required.

Claim Objections

2. Claim 14 is objected to because of the following informalities: line 5 "sad" should be said. Appropriate correction is required.
3. Claim 15 is objected to because of the following informalities: line 3 it appears "(8) of a gamma shield" should be by a gamma shield. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2, 6, 14, 18, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claims 2 and 14 use the phrase and/or extensively and appear to claim 2 different elements with 2 possible positions. It is unclear exactly what is being claimed

and what is positively recited in the claims. What structure must be present? and how does the claim limit the required structures' positioning.

7. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 6 and 18 recite the broad recitation "an elemental substance", and the claim also recites "eg hydrogen, aluminum, silicon, or iron,..." which is the narrower statement of the range/limitation.

8. Claim 22 recites the limitation "the cluster analysis" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 13-24 are directed to a method of automatically sorting objects but no sorting is actually claimed. The result of the claim is a control signal which is generated and emitted to the sorting device. The generating and emitting of a signal is not considered statutory subject matter as it fails to produce a useful, concrete, and tangible result, see MPEP 2106 IV C 2 (2). A claim limitation reciting the method step of sorting the objects based on the control signal could overcome this rejection. As currently drafted the claims do not actually require any sorting step to take place only that the sorter device is capable of using the signal to sort the objects.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-9, 11, 13-21 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,414,195 to Peterson et al. Peterson discloses a conveyor mechanism (94) configured for conveying at least one object (c1 lines 22+) to a sorter device (c4 lines 45+); a sensor device (92) arranged such that conveyed objects are caused to be located essentially within a predetermined reading space (96); a calculator/classification unit (114) configured for receiving an electrical sensor signal representing measurement data from said sensor device and configured for generating and emitting a control signal (c4 lines 45+) to said sorter device configured for sorting

Art Unit: 3653

conveyed objects on the basis of said control signal, characterised in that said sensor device is based on Prompt Gamma-Neutron Activation Analysis (PGNAA) and comprises a neutron source (100) configured for emitting neutrons; a moderator (102) surrounding said neutron source and said measurement space, and configured for moderating said emitted neutrons; and a detector (104) configured for detecting gamma radiation emitted by an object arranged within said measurement space when the object is exposed to a neutron flux with a given energy distribution, and generation of said electrical sensor signal on the basis of said detection (c9 lines 1+); and that said control signal is generated on the basis of said sensor signal. Regarding the method steps of claim 13 see above and columns 2, 4, and 8 of Peterson.

-Re claims 2 and 14 said sensor device further comprises a gamma shield (108) and/or a neutron shield (110), wherein said gamma shield is located between said source and said measurement space and/or wherein said neutron shield is arranged between said detector and said measurement space (figures 4 and 5).

-Re claims 3 and 15 said sensor device further comprises a gamma shield (108) arranged around said neutron source such that direct radiation of gamma from the neutron source to said detector is minimised.

-Re claims 4 and 16 said sorting system is configured for sorting a flow of waste (c1 lines 22+). Also examiners notes relative to claim 4 that the material treated does not further limit an apparatus claim, see MPEP 2115.

-Re claims 5 and 17 said detection is performed contact-free with regard to the object (figures 4 and 5).

-Re claims 6 and 18 an estimate of the amount of sample material in said measurement space is provided on the basis of gamma radiation of an elemental substance, eg hydrogen, aluminum, silicon or iron, present in the sample material in a known concentration (c9 lines 1+).

-Re claims 7 and 19 said sensor device primarily comprises carbon material as moderator (c8 lines 20+). Examiner notes that paraffin and polyethylene are both primarily carbon by weight. Examiner also notes that claim 19 is dependant from claim 23 rather than claim 13. It is believed that possibly this is a typographical error and correction or confirmation the claim is requested.

-Re claims 8 and 20 the system is configured for receiving measurements of objects with a known classification; and that the classification unit comprises means for calculating weight factors of a number of weighted sums established by multivariable data analysis, calibration or iterative method, by which an improved set of weight factors

Art Unit: 3653

is successively attained by incremental refining (c2 lines 63+, c6 lines 28+, and c10 lines 13+).

-Re claims 9 and 21 said control signal is provided by the classification unit on the basis of signals comprising said weight factors and said sensor signal c2 lines 63+).

-Re claims 11 and 23 said sensor signal comprises a gamma spectre representing registered gamma radiation intensity within a given photon/energy range (c10 lines 13+).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson in view of US 7,244,902 to Popp. Peterson fails to disclose cluster analysis is used as a step in automatic generation of suggestions for categorising sample objects on the basis of patterns in measurement data corresponding to said objects. Popp discloses cluster analysis is used as a step in automatic generation of suggestions for categorising sample objects on the basis of patterns in measurement

data corresponding to said objects (c3 lines 43+). Examiner further notes that cluster analysis is a common technique used in classification and data analysis.

It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to have modified Peterson to include cluster analysis is used as a step in automatic generation of suggestions for categorising sample objects on the basis of patterns in measurement data corresponding to said objects, as taught by Popp and is well known in the art, as the substitution of one known data analysis technique for another known technique would have been obvious to one of ordinary skill. Examiner further notes that Popp discusses many methods including but not limited to clustering and neuronal networks.

13. Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peterson in view of US 6,657,189 to Atwell et al. Peterson discloses all the limitations of the claims except that said control signal is provided on the basis of a difference between a sensor signal and a predetermined reference spectre obtained with empty measurement space and stored in a memory unit. Atwell discloses background correction including that said control signal is provided on the basis of a difference between a sensor signal and a predetermined reference spectre obtained with empty measurement space and stored in a memory unit. (c3 lines 10+) for the purpose of minimizing PGNA measurement errors (c2 lines 38+).

It would have been obvious to one of ordinary skill in the art at the time of applicants' invention to have modified Peterson to include that said control signal is

provided on the basis of a difference between a sensor signal and a predetermined reference spectre obtained with empty measurement space and stored in a memory unit, as taught by Atwell, for the purpose of minimizing PGNAA measurement errors.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Hageman whose telephone number is (571) 272-3027. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Mackey can be reached on (571) 272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/530,769
Art Unit: 3653

Page 10

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Unit 3653

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